

## PATENT CLAIMS

1. A process for manufacturing an electric conductor (21, 31, 51) with at least two elongated, superconducting cores (3, 33, 43), each of which is enclosed in cross-section by at least one sheath (4, 6, 34, 46) and by a casing (5, 35, 45), each sheath (4, 6, 34, 46) comprising at least one metallic material and being essentially electrically conducting, and the cores (3, 33, 43), sheaths (4, 6, 34, 46) and casings (5, 35, 45) together being lengthened by forming and together being subjected to at least one heat treatment in an oxygen-containing environment, characterized in that the casings (5, 35, 45) are formed from a casing material which already comprises at least one metal-oxygen compound before the heat treatment.

2. The process as claimed in claim 1, characterized in that the casing material used for the formation of the casings (5, 35, 45) contains, as the metal-oxygen compound, a metal oxide and/or titanate and/or zirconate and/or hafniate.

3. The process as claimed in claim 1 ~~or 2~~, characterized in that the casing material used for the formation of the casings (5, 35, 45) contains, as the metal-oxygen compound, magnesium oxide and/or zirconium oxide and/or hafnium oxide and/or bismuth oxide and/or thallium oxide and/or yttrium oxide.

4. The process as claimed in claim 1 ~~or 2~~, characterized in that the casing material used for the formation of the casings (5, 34, 45) contains, as the metal-oxygen compound, barium zirconate ( $\text{BaZrO}_3$ ) and/or barium titanate ( $\text{BaTiO}_3$ ) and/or the zirconium oxide ( $\text{ZrO}_2$ ).

5. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 4~~, characterized in that a sheath (4, 34) directly adjacent to the core (3, 33, 43) and enclosing said core and the casing (5, 35) enclosing said sheath are formed for each core (3, 33, 43).

6. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 4~~, characterized in that a casing (45) directly adjacent to the core (43) and enclosing said core and a sheath (46) enclosing said casing are formed for each core (43).

7. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 6~~, characterized in that the or each metal-oxygen compound contained in the casing material is particulate during the formation of the casings (5, 35, 45), the or each particulate metal-oxygen compound preferably being formed in the form of solid particles which preferably have a particle size of at most 2  $\mu\text{m}$  before the beginning of the forming of the conductor (21, 31, 51).

8. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 7~~, characterized in that the casing material used for the formation of the casing (5, 35, 45) has a solid phase or is completely solid, and that the solid phase or the solid casing material consists exclusively of at least one metal-oxygen compound.

9. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 7~~, characterized in that the or each metal-oxygen compound is mixed with particulate, metallic material during the formation of the casing material.

10. The process as claimed in claim 9, characterized in that the metallic material serving for the formation of the casing material comprises silver and, for

example, consists of pure silver and/or of a silver alloy.

11. The process as claimed in claim 9 ~~or 10~~, characterized in that the proportion of silver in the mixture consisting of at least one metal-oxygen compound and metallic material and/or in the casings (5, 35) of the finished conductor is at most 60% by weight, preferably at most 30% by weight and, for example, about or at most 10% by weight.

12. The process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 8~~, characterized in that each core (3, 33) comprises ceramic material, at least in the finished conductor.

13. The process as claimed in <sup>claim 1</sup> ~~at least one of claims 1 to 12~~, characterized in that the sheaths (4, 6, 34, 46) are formed from a sheath material which consists at least partly of silver.

14. The process as claimed in claim 13, characterized in that the sheaths (4, 6, 34, 46) are formed from a sheath material which for the most part by weight consists of silver and also contains at least one of the elements antimony, gold, copper, magnesium, manganese, titanium, aluminum.

15. An electric conductor with at least two elongated, superconducting cores (3, 33), characterized in that said conductor is manufactured by the process as claimed in <sup>claim 1</sup> ~~any of claims 1 to 12~~.